



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09/708,085 11/08/00 JIWARI

N 0819-450

022204
NIXON PEABODY, LLP
8180 GREENSBORO DRIVE
SUITE 800
MCLEAN VA 22102

MMC2/0815

EXAMINER

NGUYEN, T
ART UNIT

PAPER NUMBER

2813
DATE MAILED:

08/15/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

BEST AVAILABLE COPY

Office Action Summary

Application N .

09/708,085

Applicant(s)

nobuhiro et al.

Examiner

Thanh T. Nguyen

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 08 November 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akahori et al. 6,218,299 in view of Homma et al. 5,420,075 or Kobayashi et al. 6,214,748.

Akahori et al. substantially discloses a method of forming a semiconductor device, which includes :

forming metal line (14, fig. 7a+), depositing an interlayer insulating film 13a made of fluorine-containing organic film between the metal lines (14) using a material gas containing fluorocarbon as a main component in a reactor chamber of plasma processing apparatus, (col. 4, lines 30+, col. 6, lines 50+),

densifying the fluorine-containing organic film by exposing the plasma of rare gas Ar in the same reactor chamber, (col. 7, lines 20+).

Homma et al. discloses a method of forming a semiconductor device, which includes :

forming metal lines (3,4,5) by known patterning methods such as with a photoresist masking and etching the conductive metal with plasma reactive ion etching, (col. 4, lines 1+), filling the gap between the metal lines with insulating layer (7).

Kobayashi et al. discloses a method of forming a semiconductor device, which includes :

forming metal lines (3c) by known patterning methods such as with a photoresist masking and etching the conductive metal with plasma etching, (col. 5, lines 50+),

filling the gap between the metal lines with insulating layer (4).

The difference between the reference(s) and the claims are as follows: Akahori et al. lacks conventional photoresist patterning the metal lines. However, Homma et al. and Kobayashi teach conventional methods for forming metal lines as described above.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified Akahori's process of forming metal lines (14) with photoresist patterning and etching the metal with plasma etching to form metal lines as suggested by Homma or Kobayashi because the technique of photoresist patterning to form metal line is well known in the art.

Conclusion

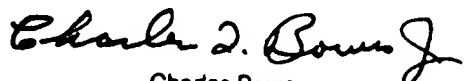
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Nguyen whose telephone number is (703) 308-9439, or by Email via address Thanh.Nguyen@uspto.gov. The examiner can normally be reached on Monday-Thursday from 7:00AM to 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Bowers, can be reached on (703) 308-2417. The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956 (See **MPEP 203.08**).

Thanh Nguyen

August 9, 2001


Charles Bowers
Supervisory Patent Examiner
Technology Center 2800